

CLAIMS:

1. A rotary electromechanical device, comprising:
a rotor, the rotor comprising a hollow hub and a plurality of magnet poles, the hollow hub having at least one aperture at each end to form at least one first passage extending through the hollow hub.
2. The device of claim 1, wherein the at least one first passage extends along a rotational axis of the hollow hub.
3. The device of claim 1, wherein the rotor further comprises vanes fixed to the hollow hub to force air through the hollow hub when the rotor is spinning.
4. The device of claim 3, wherein the vanes are located in the at least one passage.
5. The device of claim 3, wherein the vanes are located at the at least one aperture.
6. The device of claim 3, wherein the vanes are arranged to drive air in the same direction.
7. The device of claim 1, further comprising:
a stator partially surrounding the rotor;
an outer casing surrounding the stator; and
at least one second passage a) having walls formed by at least one of the stator and the outer casing, and b) communicating with each end of the at least one first passage.
8. The device of claim 7, wherein the device is a brushless machine.
9. The device of claim 7, wherein the at least one second passage extends through the stator.

10. The device of claim 7, wherein the at least one second passage extends between the stator and a case of the device.

11. The device of claim 1, comprising a stator partially surrounding the rotor.

12. A method for cooling a rotary electromechanical device having a rotor, comprising:

providing the rotor with a hollow center and apertures at each end of the rotor; and driving air through the hollow center of the rotor via the apertures.

13. The method of claim 12, further comprising:

providing vanes at an end of the rotor; and

spinning the rotor to drive air through the apertures and the hollow center of the rotor via the vanes.

14. An electric machine, comprising:

a rotor; and

means for driving air through a center of the rotor.

15. The electric machine of claim 14, wherein the means for driving air is arranged to drive air through the center of the rotor, along a rotational axis of the rotor.

16. The electric machine of claim 14, wherein the means for driving comprises:

vanes fixed to the rotor and angled to force air through a hollow hub of the rotor when the rotor is rotating.

17. The electric machine of claim 14, further comprising:

a stator partially surrounding the rotor;

an outer casing surrounding the stator; and

means for conveying air exiting from one end of the rotor, to the other end of the rotor.